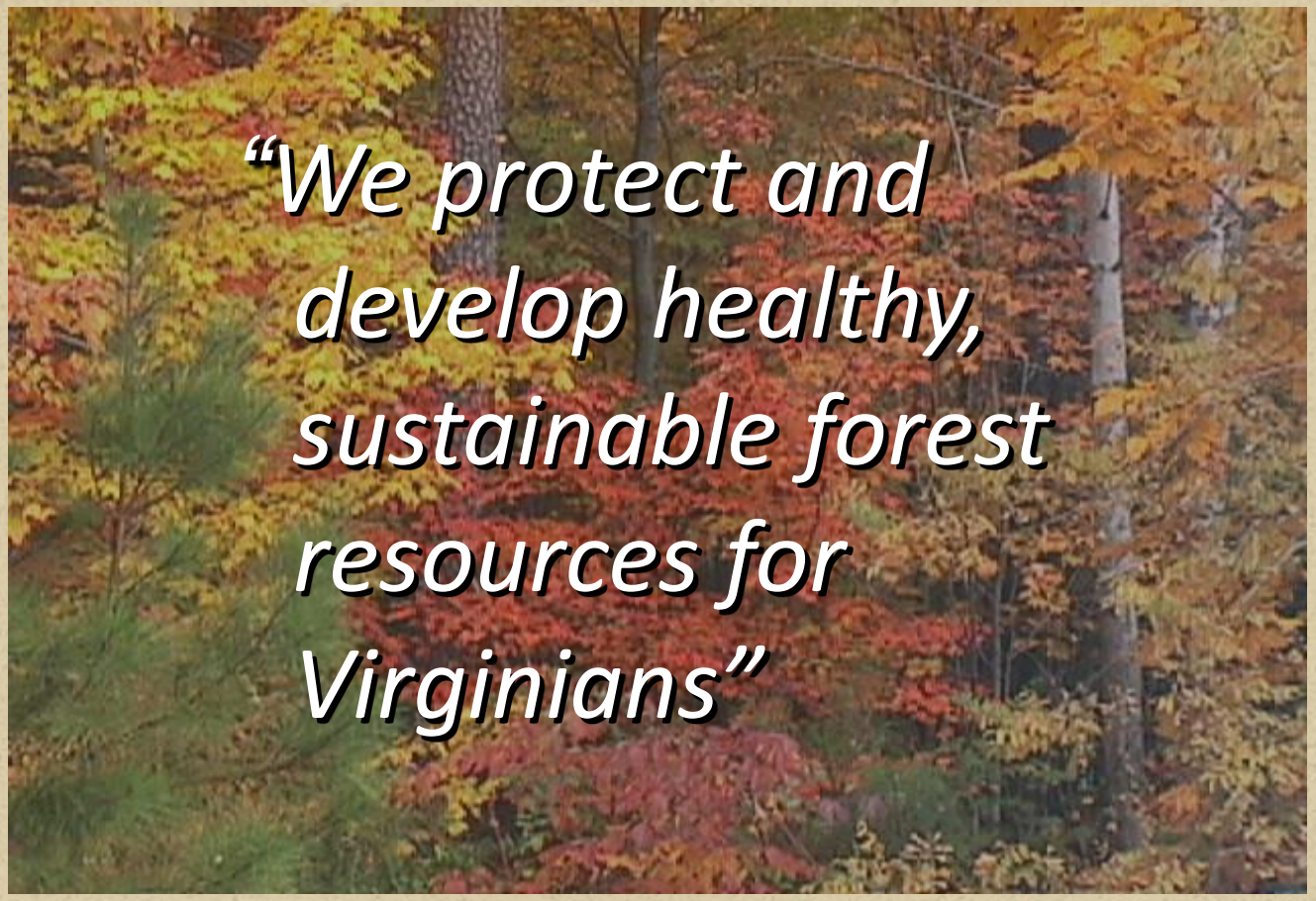
Virginia Department of Forestry Water Resources Program

Chesapeake Bay Forestry Workgroup Meeting

April 8, 2014

VDOF Mission for Forestry in Virginia



VDOF Goals for Forestry in Virginia

VDOF Currently has 245 employees, approximately 144 of these are field employees

- Protect the Forest Resource from Wildfire, Insect and Disease, and other Natural Disaster
- Protect Water Quality
- Improve and Renew Forest Resources
- Conserve the Forest Land Base

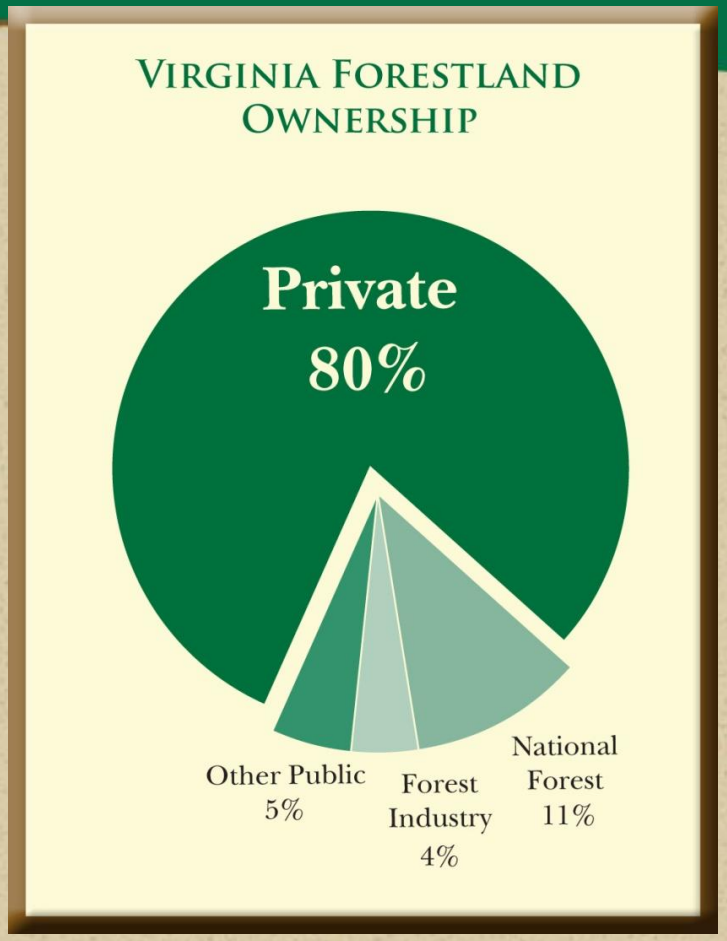
Forest Benefits

- $25.2 billion annually to Virginia's economy – primary producers
- Employ 184,000 Virginians in the forest products industry
- $275 million to forest landowners
- $2.4 billion annually for recreational spending

Virginia Forest Cover

From year 2004-2006 Landsat satellite imagery, classified by the Virginia Department of Foroestry

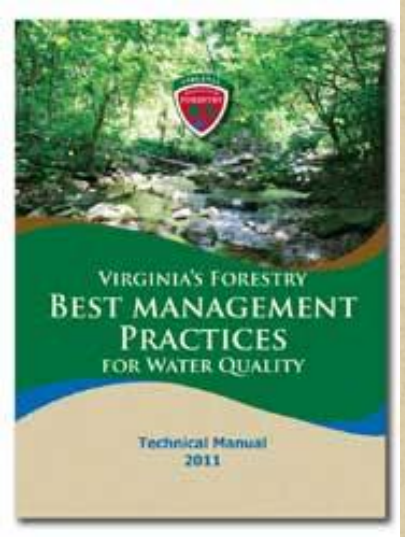
Virginia Timberland Ownership



- 15.9 Million Acres with 300,000 Landowners with 5 Acres or More

Protecting Virginia's Water Quality

- Harvest Inspection Program
- Law Enforcement
  - Silvicultural Water Quality Law
- Education
- Research



Protecting Virginia's Water Quality

- Riparian Forest Buffer Program
- Riparian Forest Buffer Tax Credit
- WQIF Funding of WQ Projects
  - Logger BMP Cost-Share Program
  - RFB Cost-Share Program
  - Small Grant Program

Harvest Inspection Program

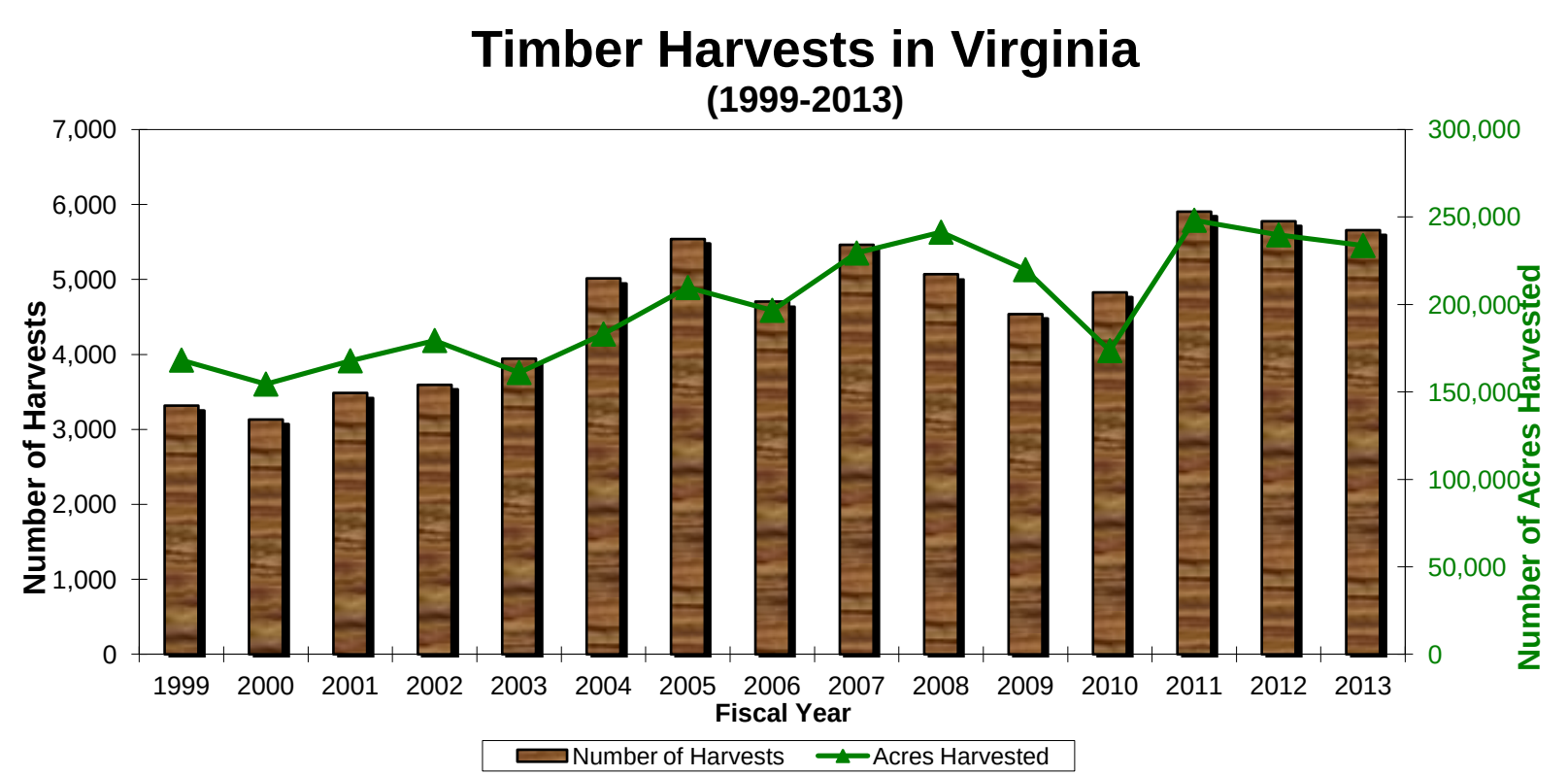
- Opportunity for one-on-one contact with loggers; this is the *backbone* of the program

- Program evolved to change Logger behavior and to prompt non-regulatory BMPs to become part of everyday operation.

- Make recommendations on BMPs as well as inspect for compliance with Silvicultural Water Quality Law

- These inspections are handled by the Regional Field personnel

Harvest Inspection Program

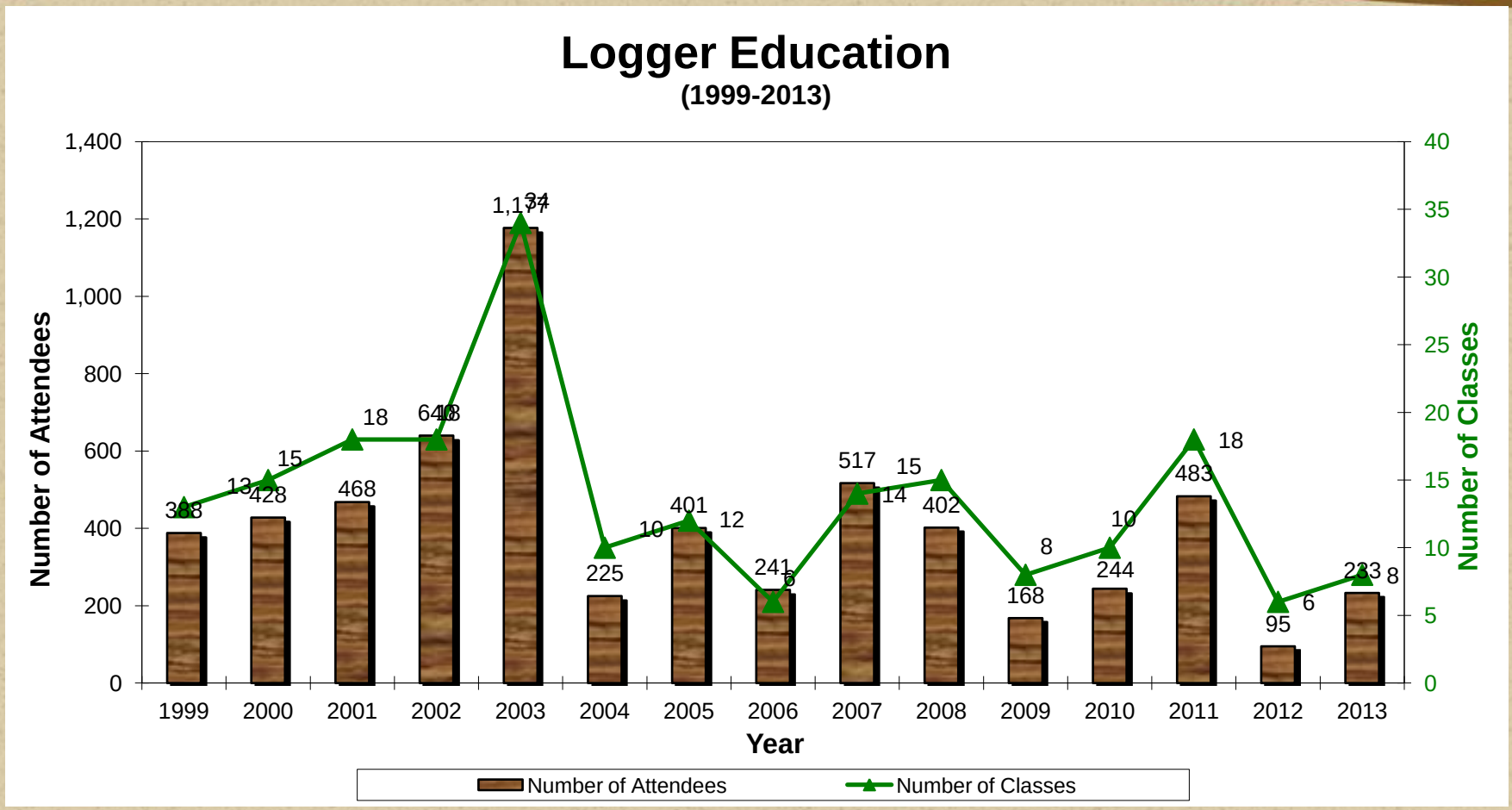


- DOF inspects approximately 5,000 harvests annually with an average size of 40 acres – many of these harvesting operations are inspected multiple times

Education

- Early training on BMPs for loggers; over 1,900 loggers and foresters trained in 1989
- Work closely with VFA and Virginia Tech on SFI *SHARP* Logger training for Harvest Planning and BMPs – 7,135 loggers in 229 sessions since 1996
- Internal training for Department of Forestry Field Inspectors
- Landowner training through SFI Landowner Workshops
- Water Quality Exhibits provided bi-annually at the East Coast Sawmill and Equipment Exposition in Richmond, reaching 10,000 people – Happening this year on May 16th and 17th.

Education


Logger Education
(1999-2013)
Number of Attendees
Number of Classes
Year
1,400
1,200
1,000
800
600
400
200
0
40
35
30
25
20
15
10
5
0
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
388
428
468
643
1,177
225
401
241
517
402
168
244
483
95
233
13
15
18
34
10
12
5
14
15
8
10
18
6
8
Number of Attendees
Number of Classes

Law Enforcement

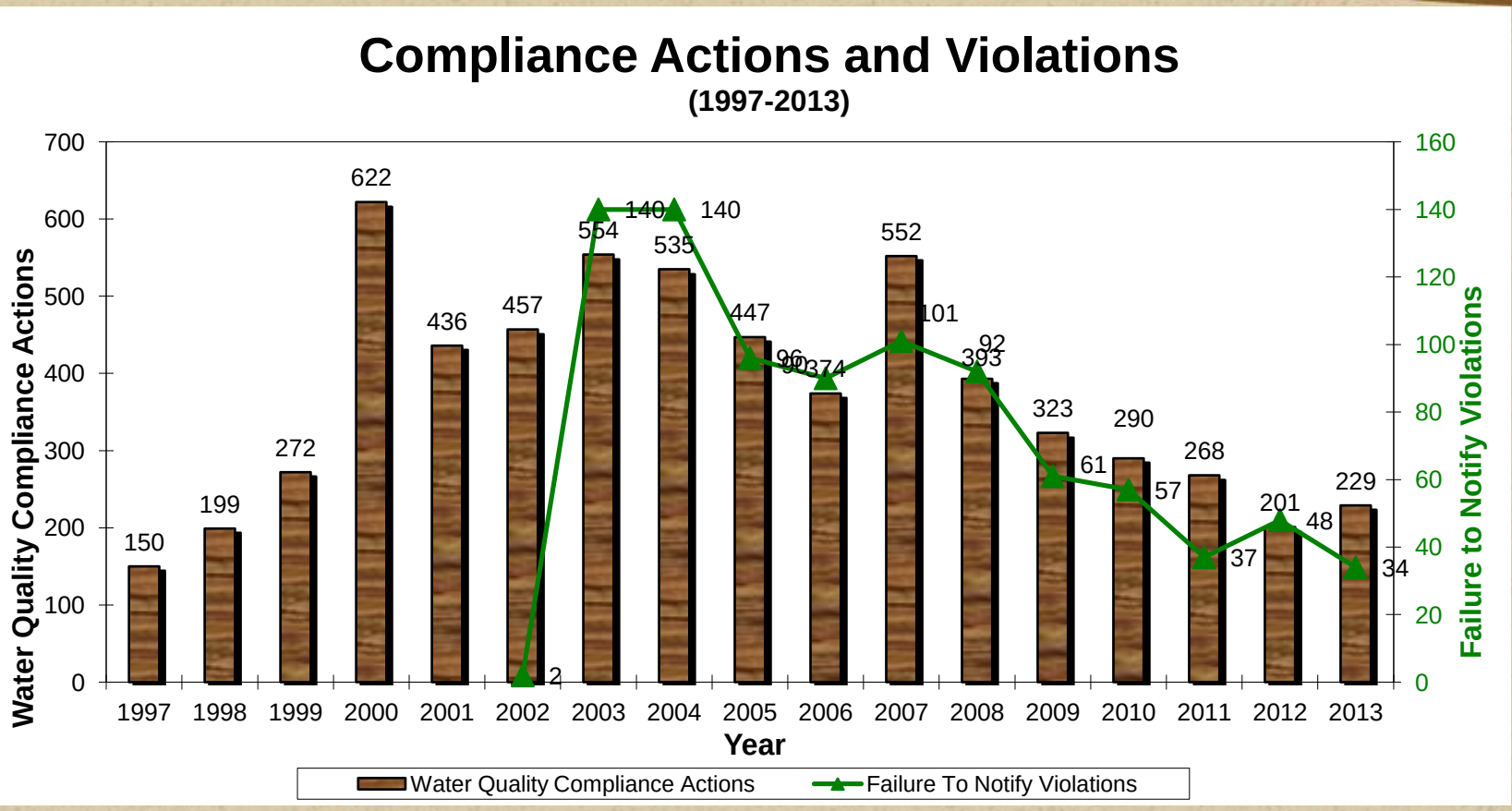
- Silvicultural Water Quality Law developed and enacted on July 1, 1993
- Outcome-based (Sediment-in-Stream) Law
- Developed with support from the forest industry
- Civil Law which works under the Administrative Process Act
- Addresses actual as well as potential pollution from sedimentation
- Holds all owners and operators accountable for protecting the Waters of the Commonwealth
- DOF is the only state forestry agency in the southeastern U. S. that has enforcement authority for this type of law
- Allows for the issuance of a Stop Work Order and Civil Penalties of up to $5,000 per day for each day of violation

Law Enforcement

- Required Notification of Logging added in 1997 with Civil Penalty for Failure to Notify added in 2002. Penalty of $250 for first violation and up to $1,000 for subsequent violations within a two year period

- This portion of the law applies only to the operator
- Operator can notify by 800 number, DOF Website, or telephone to the local DOF office and they will receive a confirmation number

Law Enforcement



- Changing Behavior!!!

What is a BMP

- A forest management practice designed to minimize or prevent nonpoint source pollution.

Best Management Practices

- **Forestry BMP's are directed primarily to control soil erosion and sedimentation in streams.**
  - **BMPs are not a system and functionality of BMPs is not dependent upon that premise. Research supports BMPS as a suite of individual practices. More is better but not necessarily more effective or cost effective. They are often synergistic but not a complete system.**
  - **We should focus on what is needed to prevent pollution on a case by case basis.**
- **Designed for a ten year storm event**
  - **10 year/24 hour storm event = 5 inches of rain in a 24 hour period. The peak rainfall during this 24 hour period is about <u>2.5 inches per hour</u>.**

Key BMP Concepts

- Minimize soil exposure and disturbance
- Control water in small amounts
- Stay as far away from stream channels as possible
- Avoid problems in the first place (planning).
- Don’t cross streams unless you have no other options.
- Establish vegetation.

Harvest Considerations

- Haul Roads
- Log Decks
- Skid Trails
- Stream Crossings
- Streamside Management Zone
- Site Preparation
- Revegetation of Bare Soil
- Preharvest Planning

Haul Roads

- Grades of 10 percent or less
- Use Broad Based Dips that are designed for continuous use
- Non-erodible running surfaces needed in SMZ and at stream approaches

Broad-Based Dip

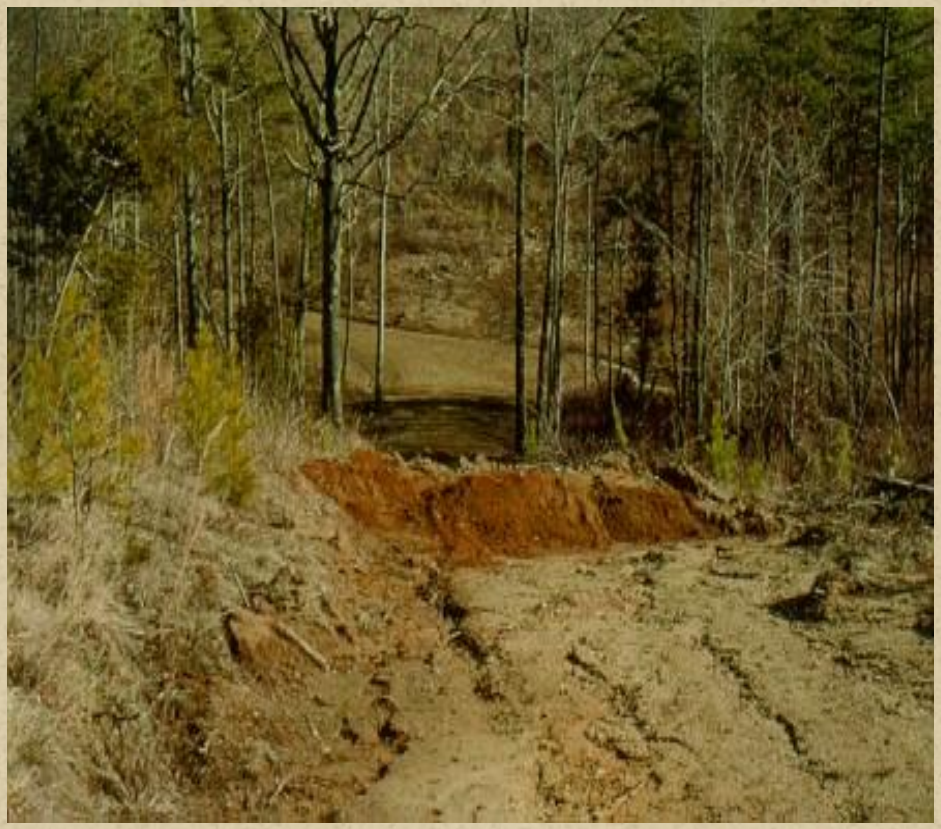
- Created over a distance of about 35 feet
- Outslope the bottom of the dip about 3 percent
- Bottom of the dip should be graveled or stoned

Log Decks

- Locate at least 50 feet outside of SMZ
- Choose well-drained site such as ridgetop
- Strategically locate to minimize skidding distance
- Remove all trash and be careful with oils and fluids

Skid Trail BMPs

- Water bars most commonly used on temporary trails
- Install water bars at a 30 to 45 degree angle downslope
- Number needed depends on steepness of slope
- Have an outlet so runoff can disperse onto the leaf litter
- If greater than 5% slope, seed and mulch



Stream Crossings

Portable Bridges

Culverts

Fords

Streamside Management Zone

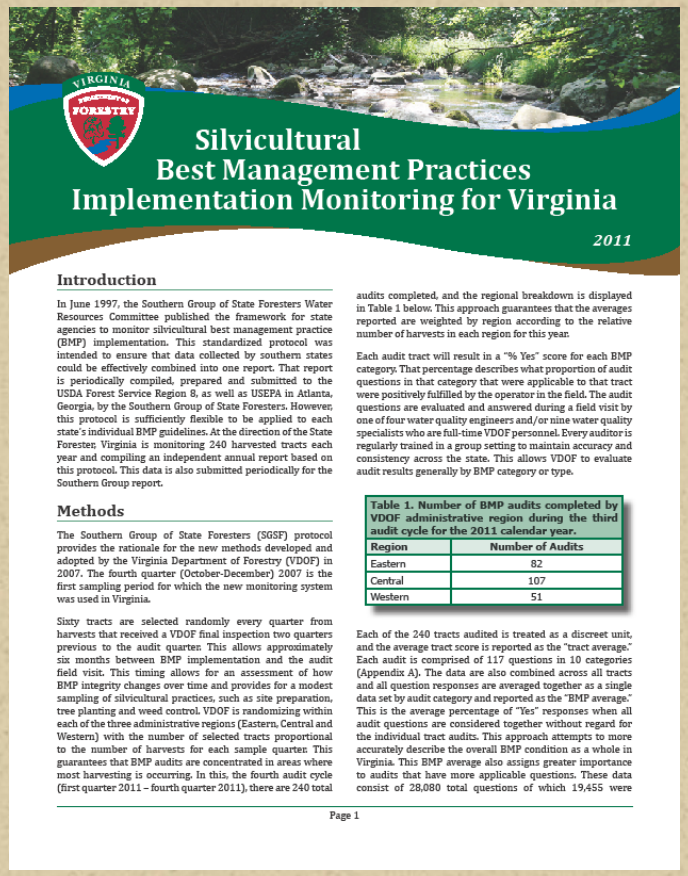
- Traps runoff
- Shade (Thermal Pollution)
- Stream Bank Protection
- Vegetation beneficial for aquatic life
  - -habitat, food, large woody debris

Vegetation

- Recommended on all slopes exceeding 5% or on any highly erodible soil
- Install all structures prior to seeding
- Mulch is often needed for poorer soils and dry weather
- Fertilize & lime if needed
- 70% vegetative cover is our goal

BMP Monitoring

- BMP Monitoring is done on a Statewide basis
- Measure BMPs on 240 Tracts per year
- Must split results out separately for the Bay Model (Vodoo Math = Bay Model)
- WIP for Virginia requires BMP implementation rate of 90% by 2017 and 95% by 2025 for the Bay Watershed
- VDOF is probably in better shape than other Bay Watershed states due to:
  - Continuous monitoring
  - Knowledge of harvest locations
  - Rigorous SGSF Monitoring Protocol
- Currently at 88.6% BMP Implementation statewide and 90.2% in Bay Watershed for 2013.



Silvicultural
Best Management Practices
Implementation Monitoring for Virginia

2011

Introduction

In June 1997, the Southern Group of State Foresters Water Resources Committee published the framework for state agencies to monitor silvicultural best management practice (BMP) implementation. This standardized protocol was intended to ensure that data collected by southern states could be effectively combined into one report. That report is periodically compiled, prepared and submitted to the USDA Forest Service Region 8, as well as USEPA in Atlanta, Georgia, by the Southern Group of State Foresters. However, this protocol is sufficiently flexible to be applied to each state's individual BMP guidelines. At the direction of the State Forester, Virginia is monitoring 240 harvested tracts each year and compiling an independent annual report based on this protocol. This data is also submitted periodically for the Southern Group report.

Methods

The Southern Group of State Foresters (SGSF) protocol provides the rationale for the new methods developed and adopted by the Virginia Department of Forestry (VDOF) in 2007. The fourth quarter (October-December) 2007 is the first sampling period for which the new monitoring system was used in Virginia.

Sixty tracts are selected randomly every quarter from harvests that received a VDOF final inspection two quarters previous to the audit quarter. This allows approximately six months between BMP implementation and the audit field visit. This timing allows for an assessment of how BMP integrity changes over time and provides for a modest sampling of silvicultural practices, such as site preparation, tree planting and weed control. VDOF is randomizing within each of the three administrative regions (Eastern, Central and Western) with the number of selected tracts proportional to the number of harvests for each sample quarter. This guarantees that BMP audits are concentrated in areas where most harvesting is occurring. In this, the fourth audit cycle (first quarter 2011 – fourth quarter 2011), there are 240 total audits completed, and the regional breakdown is displayed in Table 1 below. This approach guarantees that the averages reported are weighted by region according to the relative number of harvests in each region for this year.

Each audit tract will result in a "% Yes" score for each BMP category. That percentage describes what proportion of audit questions in that category that were applicable to that tract were positively fulfilled by the operator in the field. The audit questions are evaluated and answered during a field visit by one of four water quality engineers and/or nine water quality specialists who are full-time VDOF personnel. Every auditor is regularly trained in a group setting to maintain accuracy and consistency across the state. This allows VDOF to evaluate audit results generally by BMP category or type.

Table 1. Number of BMP audits completed by VDOF administrative region during the third audit cycle for the 2011 calendar year.

Region	Number of Audits
Eastern	82
Central	107
Western	51

Each of the 240 tracts audited is treated as a discreet unit, and the average tract score is reported as the "tract average." Each audit is comprised of 117 questions in 10 categories (Appendix A). The data are also combined across all tracts and all question responses are averaged together as a single data set by audit category and reported as the "BMP average." This is the average percentage of "Yes" responses when all audit questions are considered together without regard for the individual tract audits. This approach attempts to more accurately describe the overall BMP condition as a whole in Virginia. This BMP average also assigns greater importance to audits that have more applicable questions. These data consist of 28,080 total questions of which 19,455 were

Page 1

BMP Monitoring

- Monitor 240 tracts per year statewide (60 per quarter)
- In Line with SGSF protocol.
  - Check sheet approach.
  - Based on the BMP manual.
  - Acknowledges uncertainty in BMP specs.
  - 90% threshold for a BMP in the field.
  - Greater data detail and capture.
  - What is really going on in the woods?
- Tracts are selected utilizing a stratified random sample (more tracts sampled where harvesting is greater)
- Information provided annually to SFI SIC for their 3rd Party Auditing for Certification

BMP Audit Categories

- Roads
- Decks
- Crossings
- SMZs
- Wetlands
- Skidding
- Planning
- Mechanical SP
- Chemicals
- Fire

- 117 questions in these 10 categories.
- All questions direct from VA BMP Manual.
- Many will not apply to any given tract.
- Auditor has final discretion.
- Yes/No/Sig. Risk/ AS response.
- Tracts earn a % score.

Statewide Scores

- **BMP score**
  - All BMPs put together in one data set for all 240 tracts.
  - 240*117=28,080 responses.
  - Average all that together and get the BMP average.
    - Overall
    - By BMP
    - By Region
- **Tract Score**
  - Average all BMPs by tract w/out combination
  - Each tract score is stand alone.
  - Average those together with equal weights.
    - Overall
    - By Region
    - Median also

Results

- Track BMP average, Tract score average, and tract median score as well as performance and importance of individual questions (issues) as well as groups of questions (roads, skidding, etc…).
  - Targeted information to Sharp Logger Program at Virginia Tech and VDOF WQ personnel.

Significant Risk and Active Sedimentation

- Each tract may have multiple risks with or without active sedimentation.
- SR reported as % of tracts with at least one SR.
- AS reported as % of tracts with an active and significant sediment problem.
  - Significance as defined by VA water quality law.
- Both must be caused by harvesting and due to failure to implement BMPs as described by SGSF protocol.

Section Assessment

Previous | Decks | Next

Audit Number: BUK11043

Save Assessment

Decks

Entire Section Not Applicable?

1. Are log decks located on relatively well drained ground with low to moderate slopes?
   (●) Yes ( ) No ( ) Not Applicable

2. Are appropriate soil protection measures in place to prevent erosion on the deck?
   ( ) Yes (●) No ( ) Not Applicable

3. Are all log decks located at least 50 feet from the nearest SMZ.
   (●) Yes ( ) No ( ) Not Applicable

4. Are water diversion structures installed to prevent water from crossing the deck?
   ( ) Yes (●) No ( ) Not Applicable

5. Are sediment trapping structures present if needed to prevent pollution?
   ( ) Yes ( ) No (●) Not Applicable

6. Are all decks limited in size?
   ( ) Yes (●) No ( ) Not Applicable

7. Are fluid spills from equipment minimal?
   (●) Yes ( ) No ( ) Not Applicable

8. Are decks reshaped where needed to ensure drainage?
   (●) Yes ( ) No ( ) Not Applicable

9. Is the deck free of trash, garbage, and other non-slash debris related to the harvest operation?
   (●) Yes ( ) No ( ) Not Applicable

BMP Audit Record Summary

Uncertify | Go to Map | Back to Search | Audit/Harvest ID: BUK11043

General Details

Reassign

Harvest Number:	BUK11043
Sample Name:	2011Q4
Audit Status:	Complete
Auditor:	Kevin Dawson

Feature Assessments

Type	%Compliance	At Risk	Active Sedimentation
Roads	77.78%	0	0
Decks	62.50%	0	0
Crossings	N/A	0	0
SMZs	100%	0	0
Wetlands	N/A	0	0
Planning	100%	0	0
Skidding	100%	0	0
Mech SP	N/A	0	0
Fires	N/A	0	0
Chemicals	N/A	0	0

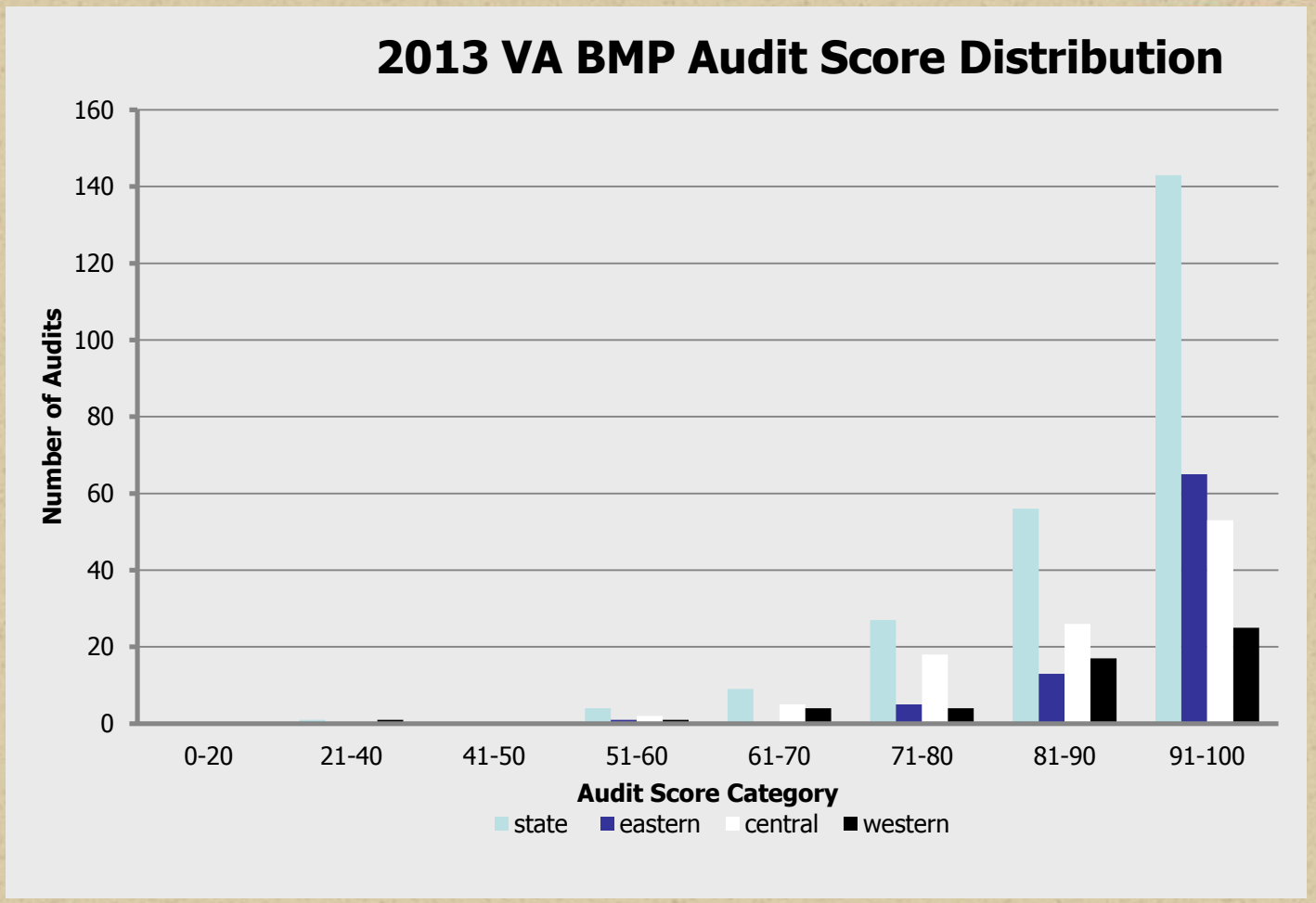
Percent Complete: 100% | Total Compliance: 85.71%

Site/Harvest Details

Edit

Audit Date:	10/17/2011
Ownership Type:	Individual Ownership
Harvest Acres (silv):	35
Written Plan?	False
Harvest Type:	Clear Cut
Physiographic Province:	Piedmont
General Terrain:	Rolling
Dominant Soil Erodibility:	Slight
Hydric Soils?	False
Cold Water Streams?	False
303d/305d Streams?	False
Source Water Protection Area?	False
Biomass Harvest?	True
Major Basin:	Piedmont James
Cheasapeake Bay Watershed:	True
Cheasapeake Bay Act?	False
Ephemeral Streams (mi):	0
Intermittent Streams (mi):	0
Perennial Streams (mi):	0.3
SMZ's (mi):	0.3
Open Water Bodies (ac):	0
Temporary Skid Crossings:	0

Overall Scores 2013



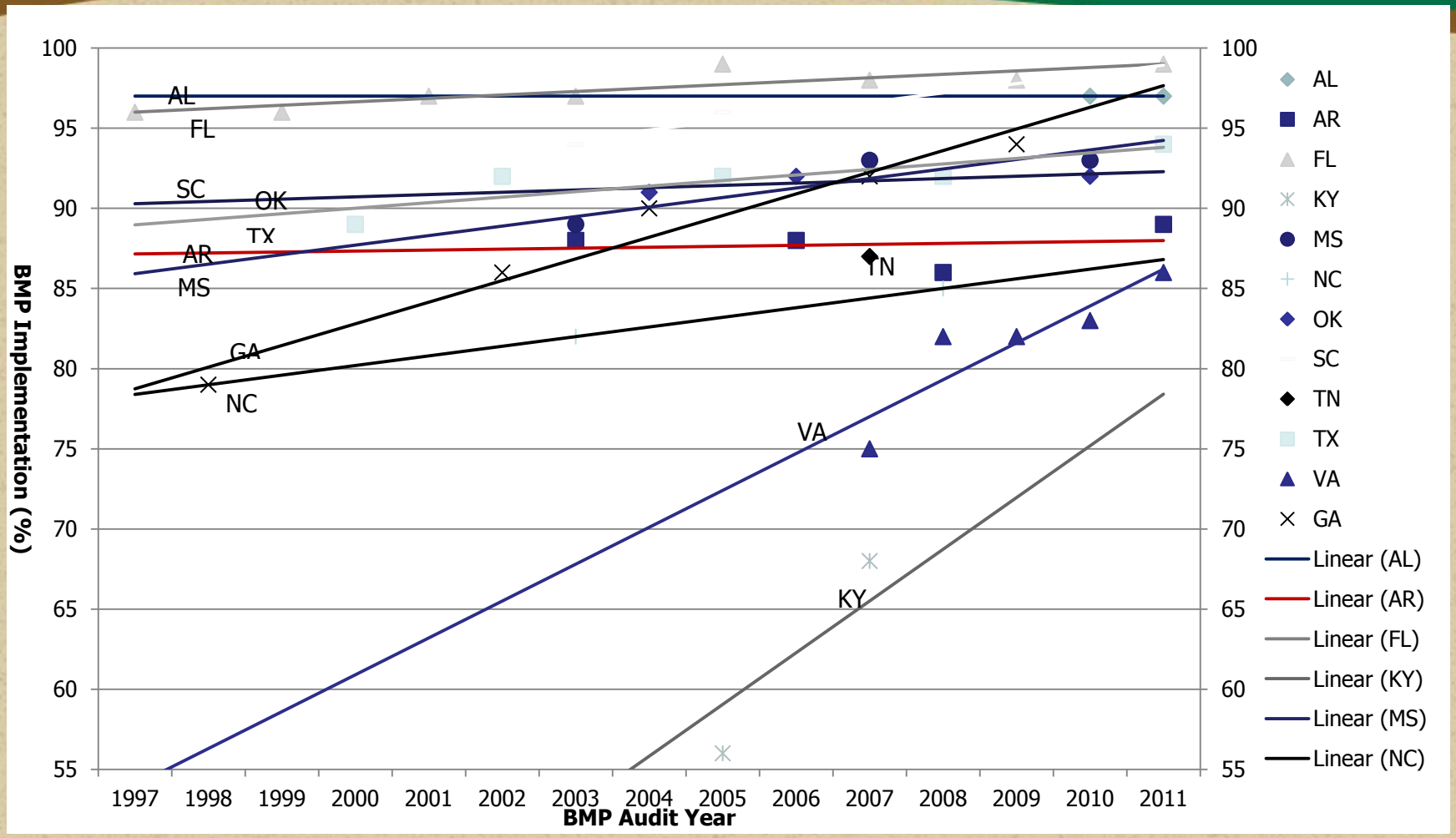
2013 Category Scores

BMP Category	Tracts (#)	Yes (%)	Margin of Error (%)
Roads	175	83.1	+/- 5.7
Decks	236	93.4	+/- 3.2
Crossings	192	92.4	+/- 5.5
SMZs	150	90.0	+/- 4.9
Wetlands	8	93.6	+/- 17.3
Planning	240	85.4	+/- 4.6
Skidding	229	87.6	+/- 4.4
Mechanical	0	---	---
Fire	4	83.9	+/- 36.8
Chemicals	2	100.0	----
All	240	**88.6**	+/- 4.1
Logging	240	**88.6**	+/- 4.1

Scores by Region

BMP Category	Eastern	Central	Western
Roads	83.0	84.0	88.2
Decks	93.9	93.7	94.9
Crossings	90.5	93.3	87.8
SMZs	97.9	90.2	83.9
Wetlands	96.6	n/a	50.0
Planning	94.5	83.6	75.9
Skidding	95.6	88.5	86.4
Mechanical	n/a	95.2	30.0
Fire	n/a	93.0	78.6
Chemicals	100.0	n/a	n/a
All	**93.1**	**89.1**	**87.3**

SGSF Trends

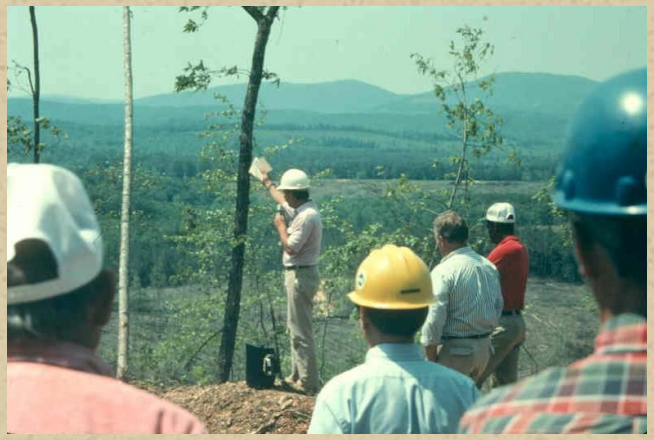

BMP Implementation (%)
BMP Audit Year
100
95
90
85
80
75
70
65
60
55
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
AL
FL
SC
OK
TX
AR
MS
GA
NC
TN
VA
KY
AL
AR
FL
KY
MS
NC
OK
SC
TN
TX
VA
GA
Linear (AL)
Linear (AR)
Linear (FL)
Linear (KY)
Linear (MS)
Linear (NC)

Major Problems

- Roads – Lack of drainage and soil cover (gravel or mats).
- Decks – Too close to or in SMZ. Exposed soil and water crossing decks.
- Crossings – Small culverts. Culvert installation. Unstable approaches.
- Skidding – Rutting on steep slopes and near streams. Lack of stabilization.

Key Points

- Major BMP projects and their costs are usually due to problems with the logging that could have been avoided.
- The vast majority (85%) of water quality law violations are related to a stream crossing.
- Most of the other 15% are due to a road, trail, or deck near a stream.
- Staying away from the water solves almost all problems.
- BMPs near or above a stream should be most important to us. They will prevent sedimentation.



The End – Questions?